

Constructing Normalcy

The Bell Curve, the Novel, and the Invention of the Disabled Body in the Nineteenth Century

Lennard J. Davis

If such a thing as a psycho-analysis of today's prototypical culture were possible... such an investigation would needs show the sickness proper to the time to consist precisely in normality.

—Theodore Adorno, *Minima Moralia*

We live in a world of norms. Each of us endeavors to be normal or else deliberately tries to avoid that state. We consider what the average person does, thinks, earns, or consumes. We rank our intelligence, our cholesterol level, our weight, height, sex drive, bodily dimensions along some conceptual line from subnormal to above-average. We consume a minimum daily balance of vitamins and nutrients based on what an average human should consume. Our children are ranked in school and tested to determine where they fit into a normal curve of learning, of intelligence. Doctors measure and weigh them to see if they are above or below average on the height and weight curves. There is probably no area of contemporary life in which some idea of a norm, mean, or average has not been calculated.

To understand the disabled body, one must return to the concept of the norm, the normal body. So much of writing about disability has focused on the disabled person as the object of study, just as the study of race has focused on the person of color. But as with recent scholarship on race, which has turned its attention to whiteness, I would like to focus not so much on the construction of disability as on the construction of normalcy. I do this because the "problem" is not the person with disabilities; the problem is the way that normalcy is constructed to create the "problem" of the disabled person.

A common assumption would be that some concept of the norm must have always existed. After all, people seem to have an inherent desire to compare themselves to others. But the idea of a norm is less a condition of human nature than it is a feature of a certain kind of society. Recent work on the ancient Greeks, on preindustrial Europe, and on tribal peoples, for example, shows that disability was once regarded very differently from the way it is now. As we will see, the social process of disabling arrived with industrialization and with the set of practices and discourses that are linked to late eighteenth- and nineteenth-century notions of nationality, race, gender, criminality, sexual orientation, and so on.

I begin with the rather remarkable fact that the constellation of words describing this concept "normal," "normalcy," "normality," "norm," "average," "abnormal"—all entered the European languages rather late in human history. The word "normal" as "constituting, conforming to, not deviating or different from, the common type or standard, regular, usual" only enters the English language around 1840. (Previously, the word had meant "perpendicular"; the carpenter's square, called a "norm," provided the root meaning.) Likewise, the word "norm," in the modern sense, has only been in use since around 1855, and "normality" and "normalcy" appeared in 1849 and 1857, respectively. If the lexicographical information is relevant, it is possible to date the coming into consciousness in English of an idea of "the norm" over the period 1840–1860.

If we rethink our assumptions about the universality of the concept of the norm, what we might arrive at is the concept that preceded it: that of the "ideal," a word we find dating from the seventeenth century. Without making too simplistic a division in the historical chronotope, one can nevertheless try to imagine a world in which the hegemony of normalcy does not exist. Rather, what we have is the ideal body, as exemplified in the tradition of nude Venuses, for example. This idea presents a mythopoetic body that is linked to that of the gods (in traditions in which the god's body is visualized). This divine body, then, this ideal body, is not attainable by a human. The notion of an ideal implies that, in this case, the human body as visualized in art or imagination must be composed from the ideal parts of living models. These models individually can never embody the ideal since an ideal, by definition, can never be found in this world. When ideal human bodies occur, they do so in mythology. So Venus or Helen of Troy, for example, would be the embodiment of female physical beauty.

The painting by François-André Vincent *Zeuxis Choosing as Models the Most Beautiful Girls of the Town of Crotona* (1789, Museum de Louvre, Paris) shows the Greek artist, as we are told by Pliny, lining up all the beautiful women of Crotona in order to select in each her ideal feature or body part and combine these into the ideal figure of Aphrodite, herself an ideal of beauty. One young woman provides a face and another her breasts. Classical painting and sculpture tend to idealize the body, evening out any particularity. The central point here is that in a culture with an ideal form of the body, all members of the population are below the ideal. No one young lady of Crotona can be the ideal. By definition, one can never have an ideal body. There is in such societies no demand that populations have bodies that conform to the ideal.

By contrast, the *grotesque* as a visual form was inversely related to the concept of the ideal and its corollary that all bodies are in some sense disabled. In that mode, the grotesque is a signifier of the people, of common life. As Bakhtin, Stallybrass and White, and others have shown, the use of the grotesque had a life-affirming transgressive quality in its inversion of the political hierarchy. However, the grotesque was not equivalent to the disabled, since, for example, it is impossible to think of people with disabilities now being used as architectural decorations as the grotesque were on the façades of cathedrals throughout Europe. The grotesque permeated culture and signified common humanity, whereas the disabled body, a later concept, was formulated as by definition excluded from culture, society, the norm.

If the concept of the norm or average enters European culture, or at least the European languages, only in the nineteenth century, one has to ask what is the cause of this conceptualization? One of the logical places to turn in trying to understand concepts like "norm" and "average" is that branch of knowledge known as statistics. Statistics begins in the early modern period as "political arithmetic"—a use of data for "promotion of sound, well-informed state policy" (Porter 1986, 18). The word *statistik* was first used in 1749 by Gottfried Achen-wall, in the context of compiling information about the state. The concept migrated somewhat from the state to the body when Bisset Hawkins defined medical statistics in 1829 as "the application of numbers to illustrate the natural history of health and disease" (cited in Porter, 1986, 24). In France, statistics were mainly used in the area of public health in the early nineteenth century. The connection between the body and industry is tellingly revealed in the fact that the leading members of the first British statistical societies formed in the 1830s and 1840s were industrialists or had close ties to industry (*ibid.*, 32).

It was the French statistician Adolphe Quetelet (1796–1847) who contributed the most to a generalized notion of the normal as an imperative. He noticed that the "law of error," used by astronomers to locate a star by plotting all the sightings and then averaging the errors, could be equally applied to the distribution of human features such as height and weight. He then took a further step of formulating the concept of "l'homme moyen" or the average man. Quetelet maintained that this abstract human was the average of all human attributes in a given country. For the average man, Quetelet wrote in 1835, "all things will occur in conformity with the mean results obtained for a society. If one seeks to establish, in some way, the basis of a social physics, it is he whom one should consider . . ." (cited in *ibid.*, 53). Quetelet's average man was a combination of *l'homme moyen physique* and *l'homme moyen morale*, both a physically average and a morally average construct.

The social implications of this idea are central. In formulating the idea of *l'homme moyen*, Quetelet is also providing a justification for *les classes moyens*. With bourgeois hegemony comes scientific justification for moderation and middle-class ideology. The average man, the body of the man in the middle, becomes the exemplar of the middle way of life. Quetelet was apparently influenced by the philosopher Victor Cousin in developing an analogy between the notion of an average man and the *juste milieu*. This term was associated with Louis Philippe's July monarchy—a concept that melded bourgeois hegemony with the constitutional monarchy and celebrated moderation and middleness (ibid., 101). In England too, the middle class as the middle way or mean had been searching for a scientific justification. The statement in *Robinson Crusoe* in which Robinson's father extols middle-class life as a kind of norm is a good example of this ideology:

the middle Station had the fewest Disasters, and was not expos'd to so many Vicissitudes as the higher or lower Part of Mankind; nay, they were not subjected to so many Distempers and Uneasiness either of Body or Mind, as those were who, by vicious Living, Luxury and Extravagancies on one Hand, or by hard Labour, Want of Necessaries, and mean or insufficient Diet on the other Hand, bring Distempers upon themselves by the natural consequences of their Way of Living; That the middle Station of Life was calculated for all kinds of Vertues and all kinds of Enjoyments; that Peace and Plenty were the Hand-maids of a middle Fortune; that Temperance, Moderation, Quietness, Health, Society, all agreeable Diversions, and all desirable Pleasures, were the Blessings attending the middle Station of Life. (Defoe 1975, 6)

Statements of ideology of this kind saw the bourgeoisie as rationally placed in the mean position in the great order of things. This ideology can be seen as developing the kind of science that would then justify the notion of a norm.¹

With such thinking, the average then becomes paradoxically a kind of ideal, a position devoutly to be wished. As Quetelet wrote, "an individual who epitomized in himself, at a given time, all the qualities of the average man, would represent at once all the greatness, beauty and goodness of that being" (cited in Porter 1986, 102). Such an average person might indeed be a literary character like Robinson Crusoe. Furthermore, one must observe that Quetelet meant this hegemony of the middle to apply not only to moral qualities but to the body as well. He wrote: "deviations more or less great from the mean have constituted [for artists] ugliness in body as well as vice in morals and a state of sickness with regard to the constitution" (ibid., 103). Here Zeuxis's notion of physical beauty as an exceptional ideal becomes transformed into beauty as the average.

Quetelet foresaw a kind of Utopia of the norm associated with progress, just as Marx foresaw a Utopia of the norm in so far as wealth and production is concerned.

one of the principal acts of civilization is to compress more and more the limits within which the different elements relative to man oscillate. The more that enlightenment is propagated, the more will deviations from the mean diminish: . . . The perfectibility of the human species is derived as a necessary consequence of all our investigations. Defects and monstrosities disappear more and more from the body. (ibid., 104)

This concept of the average, as applied to the concept of the human, was used not only by statisticians but even by the likes of Marx. Marx actually cites Quetelet's notion of the average man in a discussion of the labor theory of value. We can see in retrospect that one of the most powerful ideas of Marx—the notion of labor value or average wages—in many ways is based on the idea of the worker constructed as an average worker. As Marx writes:

Any average magnitude, however, is merely the average of a number of separate magnitudes all of one kind, but differing as to quantity. In every industry, each individual labourer, be he Peter or Paul, differs from the average labourer. These individual differences, or "errors" as they are called in mathematics, compensate one another and vanish, whenever a certain minimum number of workmen are employed together. (Marx 1970, 323)

So for Marx one can divide the collective work day of a large number of workers and come up with "one day of average social labor" (ibid., 323). As Quetelet had come up with an average man, so Marx postulates an average worker, and from that draws conclusions about the relationship between an average and the extremes of wealth and poverty that are found in society. Thus Marx develops his crucial concept of "abstract labor."

We tend not to think of progressives like Marx as tied up with a movement led by businessmen, but it is equally true that Marx is unimaginable without a tendency to contemplate average humans and think about their abstract relation to work, wages, and so on. In this sense, Marx is very much in step with the movement of normalizing the body and the individual. In addition, Marxist thought encourages us toward an enforcing of normalcy in the sense that the deviations in society, in terms of the distribution of wealth for example, must be minimized.

The concept of a norm, unlike that of an ideal, implies that the majority of the population must or should somehow be part of the norm. The norm pins down that majority of the population that falls under the arch of the standard bell-shaped curve. This curve, the graph of an exponential function, that was known variously as the astronomer's "error law," the "normal distribution," the "Gaussian density function," or simply "the bell curve," became in its own way a symbol of the tyranny of the norm. Any bell curve will always have at its extremities those characteristics that deviate from the norm. So, with the concept of the norm comes the concept of deviations or extremes. When we think of bodies, in a society where the concept of the norm is operative, then people with disabilities will be thought of as deviants. This, as we have seen, is in contrast to societies with the concept of an ideal, in which all people have a non-ideal status.²

In England, there was an official and unofficial burst of interest in statistics during the 1830s. A statistical office was set up at the Board of Trade in 1832, and the General Register Office was created in 1837 to collect vital statistics. All of this interest in numbers concerning the state was a consequence of the Reform Act of 1832, the Factory Act of 1833, and the Poor Law of 1834. The country was being monitored and the poor were being surveilled. Private groups followed, and in 1833 a statistical section of the British Association for the Advancement of Science was formed in which Quetelet as well as Malthus participated. In the following year Malthus, Charles Babbage, and others founded the Statistical Society of London. The Royal London Statistical Society was founded in 1835.

The use of statistics began an important movement, and there is a telling connection for the purposes of this book between the founders of statistics and their larger intentions. The rather amazing fact is that almost all the early statisticians had one thing in common: they were eugenicists. The same is true of key figures in the movement: Sir Francis Galton, Karl Pearson, and R. A. Fisher.³ While this coincidence seems almost too striking to be true, we must remember that there is a real connection between figuring the statistical measure of humans and then hoping to improve humans so that deviations from the norm diminish—as someone like Quetelet had suggested. Statistics is bound up with eugenics because the central insight of statistics is the idea that a population can be normed. An important consequence of the idea of the norm is that it divides the total population into standard and nonstandard subpopulations. The next step in conceiving of the population as norm and non-norm is for the state to attempt to norm the nonstandard—the aim of eugenics. Of course such an activity is profoundly paradoxical since the inviolable rule of statistics is that all phenomena will always conform to a bell curve. So norming the non-normal is an activity as problematic as untying the Gordian knot.

MacKenzie asserts that it is not so much that Galton's statistics made possible eugenics but rather that "the needs of eugenics in large part determined the content of Galton's statistical theory" (1981, 52). In any case, a symbiotic relationship exists between statistical science and eugenic concerns. Both bring into society the concept of a norm, particularly a normal body, and thus in effect create the concept of the disabled body.

It is also worth noting the interesting triangulation of eugenicist interests. On the one hand Sir Francis Galton was cousin to Charles Darwin, whose notion of the evolutionary advantage of the fittest

lays th
impro
biolog
ideas
natur:
includ
In
tion.
he wr

c
i
F
I

Fing
But f
body
techn
body
man
phys
relat
as or
the r

F
nine
coin
of th
ners
This
emp
inte
the
wh
irre
iden
with

wh
cou
not
is t
cor
"er

the
the
am
to

lays the foundation for eugenics and also for the idea of a perfectible body undergoing progressive improvement. As one scholar has put it, "Eugenics was in reality applied biology based on the central biological theory of the day, namely the Darwinian theory of evolution" (Farrall 1985, 55). Darwin's ideas serve to place disabled people along the wayside as evolutionary defectives to be surpassed by natural selection. So, eugenics became obsessed with the elimination of "defectives," a category which included the "feeble-minded," the deaf, the blind, the physically defective, and so on.

In a related discourse, Galton created the modern system of fingerprinting for personal identification. Galton's interest came out of a desire to show that certain physical traits could be inherited. As he wrote:

one of the inducements to making these inquiries into personal identification has been to discover independent features suitable for hereditary investigation.... it is not improbable, and worth taking pains to inquire whether each person may not carry visibly about his body undeniable evidence of his parentage and near kinships. (cited in MacKenzie 1981, 65)

Fingerprinting was seen as a physical mark of parentage, a kind of serial number written on the body. But further, one can say that the notion of fingerprinting pushes forward the idea that the human body is standardized and contains a serial number, as it were, embedded in its corporeality. (Later technological innovations will reveal this fingerprint to be embedded at the genetic level.) Thus the body has an identity that coincides with its essence and cannot be altered by moral, artistic, or human will. This indelibility of corporeal identity only furthers the mark placed on the body by other physical qualities—intelligence, height, reaction time. By this logic, the person enters into an identical relationship with the body, the body forms the identity, and the identity is unchangeable and indelible as one's place on the normal curve. For our purposes, then, this fingerprinting of the body means that the marks of physical difference become synonymous with the identity of the person.

Finally, Galton is linked to that major figure connected with the discourse of disability in the nineteenth century—Alexander Graham Bell. In 1883, the same year that the term "eugenics" was coined by Galton, Bell delivered his eugenicist speech *Memoir upon the Formation of a Deaf Variety of the Human Race*, warning of the "tendency among deaf-mutes to select deaf-mutes as their partners in marriage" (1969, 19) with the dire consequence that a race of deaf people might be created. This echoing of Dr. Frankenstein's fear that his monster might mate and produce a race of monsters emphasizes the terror with which the "normal" beholds the differently abled.⁴ Noting how the various interests come together in Galton, we can see evolution, fingerprinting, and the attempt to control the reproductive rights of the deaf as all pointing to a conception of the body as perfectible but only when subject to the necessary control of the eugenicists. The identity of people becomes defined by irrepressible identificatory physical qualities that can be measured. Deviance from the norm can be identified and indeed criminalized, particularly in the sense that fingerprints came to be associated with identifying deviants who wished to hide their identities.

Galton made significant changes in statistical theory that created the concept of the norm. He took what had been called "error theory," a technique by which astronomers attempted to show that one could locate a star by taking into account the variety of sightings. The sightings, all of which could not be correct, if plotted would fall into a bell curve, with most sightings falling into the center, that is to say, the correct location of the star. The errors would fall to the sides of the bell curve. Galton's contribution to statistics was to change the name of the curve from "the law of frequency of error" or "error curve," the term used by Quetelet, to the "normal distribution" curve.

The significance of these changes relates directly to Galton's eugenicist interests. In an "error curve" the extremes of the curve are the most mistaken in accuracy. But if one is looking at human traits, then the extremes, particularly what Galton saw as positive extremes—tallness, high intelligence, ambitiousness, strength, fertility—would have to be seen as errors. Rather than "errors" Galton wanted to think of the extremes as distributions of a trait. As MacKenzie notes:

Thus there was a gradual transition from use of the term "probable error" to the term "standard deviation" (which is free of the implication that a deviation is in any sense an error), and from the term "law of error" to the term "normal distribution." (1981, 59)

But even without the idea of error, Galton still faced the problem that in a normal distribution curve that graphed height, for example, both tallness and shortness would be seen as extremes in a continuum where average stature would be the norm. The problem for Galton was that, given his desire to perfect the human race, or at least its British segment, tallness was preferable to shortness. How could both extremes be considered equally deviant from the norm? So Galton substituted the idea of ranking for the concept of averaging. That is, he changed the way one might look at the curve from one that used the mean to one that used the median—a significant change in thinking eugenically.

If a trait, say intelligence, is considered by its average, then the majority of people would determine what intelligence should be—and intelligence would be defined by the mediocre middle. Galton, wanting to avoid the middling of desired traits, would prefer to think of intelligence in ranked order. Although high intelligence in a normal distribution would simply be an extreme, under a ranked system it would become the highest ranked trait. Galton divided his curve into quartiles, so that he was able to emphasize ranked orders of intelligence, as we would say that someone was in the first quartile in intelligence (low intelligence) or the fourth quartile (high intelligence). Galton's work led directly to current "intelligence quotient" (IQ) and scholastic achievement tests. In fact, Galton revised Gauss's bell curve to show the superiority of the desired trait (for example, high intelligence). He created what he called an "ogive," which is arranged in quartiles with an ascending curve that features the desired trait as "higher" than the undesirable deviation. As Stigler notes:

If a hundred individuals' talents were ordered, each could be assigned the numerical value corresponding to its percentile in the curve of "deviations from an average": the middlemost (or median) talent had value 0 (representing mediocrity), an individual at the upper quartile was assigned the value 1 (representing one probable error above mediocrity), and so on. (1986, 271)

What these revisions by Galton signify is an attempt to redefine the concept of the "ideal" in relation to the general population. First, the application of the idea of a norm to the human body creates the idea of deviance or a "deviant" body. Second, the idea of a norm pushes the normal variation of the body through a stricter template guiding the way the body "should" be. Third, the revision of the "normal curve of distribution" into quartiles, ranked in order, and so on, creates a new kind of "ideal." This statistical ideal is unlike the classical ideal which contains no imperative to be the ideal. The new ideal of ranked order is powered by the imperative of the norm, and then is supplemented by the notion of progress, human perfectibility, and the elimination of deviance, to create a dominating, hegemonic vision of what the human body should be.

While we tend to associate eugenics with a Nazi-like racial supremacy, it is important to realize that eugenics was not the trade of a fringe group of rightwing, fascist maniacs. Rather, it became the common practice of many, if not most, European and American citizens. When Marx used Quetelet's idea of the average in his formulation of average wage and abstract labor, socialists as well as others embraced eugenic claims, seeing in the perfectibility of the human body a Utopian hope for social improvement. Once people allowed that there were norms and ranks in human physiology, then the idea that we might want to, for example, increase the intelligence of humans, or decrease birth defects, did not seem so farfetched. These ideas were widely influential: in the ensuing years the leaders of the socialist Fabian Society, including Beatrice and Sidney Webb, George Bernard Shaw and H. G. Wells, were among the eugenicists (MacKenzie, 1981, 34). The influence of eugenicist ideas persisted well into the twentieth century, so that someone like Emma Goldman could write that unless birth control was encouraged, the state would "legally encourage the increase of paupers, syphilitics, epileptics, dipsomaniacs, cripples, criminals, and degenerates" (Kevles 1985, 90).

The problem for people with disabilities was that eugenicists tended to group together all allegedly

"undes-
tioned
the "ur
mental
1911, I
Labor:
inherit
herma
(more
Here a
All of
the na

th
ar
to
(i

The er
citzer
such a
make
mulat
menta
physic
Or
includ
"relat
ness a
immi
given
search
ment

Th
incor
havin
early
as op
67).
As th
abou
gene:
eccer
Rock
Theo
mem
he re
the /
mov
1920

"undesirable" traits. So, for example, criminals, the poor, and people with disabilities might be mentioned in the same breath. Take Karl Pearson, a leading figure in the eugenics movement, who defined the "unfit" as follows: "the habitual criminal, the professional tramp, the tuberculous, the insane, the mentally defective, the alcoholic, the diseased from birth or from excess" (cited in Kevles 1985, 33). In 1911, Pearson headed the Department of Applied Statistics, which included the Galton and Biometric Laboratories at University College in London. This department gathered eugenic information on the inheritance of physical and mental traits including "scientific, commercial, and legal ability, but also hermaphroditism, hemophilia, cleft palate, harelip, tuberculosis, diabetes, deaf-mutism, polydactyly (more than five fingers) or brachydactyly (stub fingers), insanity, and mental deficiency" (ibid., 38-9). Here again one sees a strange selection of disabilities merged with other types of human variations. All of these deviations from the norm were regarded in the long run as contributing to the disease of the nation. As one official in the Eugenics Record Office asserted:

the calculus of correlations is the sole rational and effective method for attacking... what makes for, and what mars national fitness.... The only way to keep a nation strong mentally and physically is to see that each new generation is derived chiefly from the fitter members of the generation before. (ibid., 39-40).

The emphasis on nation and national fitness obviously plays into the metaphor of the body. If individual citizens are not fit, if they do not fit into the nation, then the national body will not be fit. Of course, such arguments are based on a false notion of the body politic—as if a hunchbacked citizenry would make a hunchbacked nation. Nevertheless, the eugenic notion that individual variations would accumulate into a composite national identity was a powerful one. This belief combined with an industrial mentality that saw workers as interchangeable and therefore sought to create a universal worker whose physical characteristics would be uniform, as would the result of their labors—a uniform product.

One of the central foci of eugenics was what was broadly called "feeble-mindedness."⁵ This term included low intelligence, mental illness, and even "pauperism," since low income was equated with "relative inefficiency" (ibid., 46).⁶ Likewise, certain ethnic groups were associated with feeble-mindedness and pauperism. Charles Davenport, an American eugenicist, thought that the influx of European immigrants would make the American population "darker in pigmentation, smaller in stature... more given to crimes of larceny, assault, murder, rape, and sex-immorality" (cited in ibid., 48). In his research, Davenport scrutinized the records of "prisons, hospitals, almshouses, and institutions for the mentally deficient, the deaf, the blind, and the insane" (ibid., 55).

The loose association between what we would now call disability and criminal activity, mental incompetence, sexual license, and so on established a legacy that people with disabilities are still having trouble living down. This equation was so strong that an American journalist writing in the early twentieth century could celebrate "the inspiring, the wonderful, message of the new heredity" as opposed to the sorrow of bearing children who were "diseased or crippled or depraved" (ibid., 67). The conflation of disability with depravity expressed itself in the formulation "defective class." As the president of the University of Wisconsin declared after World War One, "we know enough about eugenics so that if the knowledge were applied, the defective classes would disappear within a generation" (ibid., 68). And it must be reiterated that the eugenics movement was not stocked with eccentrics. Davenport was funded by Averell Harriman's sister Mary Harriman, as well as John D. Rockefeller, Prime Ministers A. J. Balfour, Neville Chamberlain, and Winston Churchill, President Theodore Roosevelt, H. G. Wells, John Maynard Keynes, and H. J. Laski, among many others, were members of eugenicist organizations. Francis Galton was knighted in 1909 for his work, and in 1910 he received the Copley Medal, the Royal Society's highest honor. A Galton Society met regularly in the American Museum of Natural History in New York City. In 1911 the Oxford University Union moved approval of the main principles behind eugenics by a vote of almost two to one. In Kansas, the 1920 state fair held a contest for "fitter families" based on their eugenic family histories, administered

intelligence tests, medical examinations, and venereal disease tests. A brochure for the contest noted about the awards, "this trophy and medal are worth more than livestock sweepstakes.... For health is wealth and a sound mind in a sound body is the most priceless of human possessions" (ibid., 62).

In England, bills were introduced in Parliament to control mentally disabled people, and in 1933 the prestigious scientific magazine *Nature* approved the Nazis' proposal of a bill for "the avoidance of inherited diseases in posterity" by sterilizing the disabled. The magazine editorial said "the Bill, as it reads, will command the appreciative attention of all who are interested in the controlled and deliberate improvement of human stock." The list of disabilities for which sterilization would be appropriate were "congenital feeble-mindedness, manic depressive insanity, schizophrenia, hereditary epilepsy, hereditary St Vitus's dance, hereditary blindness and deafness, hereditary bodily malformation and habitual alcoholism" (cited in MacKenzie 1981, 44). We have largely forgotten that what Hitler did in developing a hideous policy of eugenics was just to implement the theories of the British and American eugenicists. Hitler's statement in *Mein Kampf* that "the struggle for the daily livelihood [between species] leaves behind, in the ruck, everything that is weak or diseased or wavering" (cited in Blacker 1952, 143) is not qualitatively different from any of the many similar statements we have seen before. And even the conclusions Hitler draws are not very different from those of the likes of Galton, Bell, and others.

In this matter, the State must assert itself as the trustee of a millennial future.... In order to fulfill this duty in a practical manner, the State will have to avail itself of modern medical discoveries. It must proclaim as unfit for procreation all those who are afflicted with some visible hereditary disease or are the carriers of it; and practical measures must be adopted to have such people rendered sterile. (cited in Blacker 1952, 144)

One might want to add here a set of speculations about Sigmund Freud. His work was made especially possible by the idea of the normal. It shows us that sexuality, long relegated to the trash heap of human instincts, was in fact normal and that perversion was simply a displacement of "normal" sexual interest. Dreams which behave in a manner unknown or only exceptionally permissible in normal mental life" (Freud 1977, 297) are seen as actually normal and "the dreams of neurotics do not differ in any important respect from those of normal people" (ibid., 456). In fact, it is hard to imagine the existence of psychoanalysis without the concept of normalcy. Indeed, one of the core principles behind psychoanalysis was that we each start out with normal psychosexual development and neurotics become abnormal through a problem in that normal development. As Freud put it: "if the *vita sexualis* is normal, there can be no neurosis" (ibid., 386). Psychoanalysis can correct that mistake and bring patients back to their normal selves. Although I cannot go into a close analysis of Freud's work here, it is instructive to think of the ways in which Freud is producing a eugenics of the mind—creating the concepts of normal sexuality, normal function, and then contrasting them with the perverse, abnormal, pathological, and even criminal. Indeed, one of the major critiques of Freud's work now centers on his assumption about what constitutes normal sexuality and sexual development for women and men.

The first depiction in literature of an attempt to norm an individual member of the population occurred in the 1850s during the development of the idea of the normal body. In Flaubert's *Madame Bovary*, Charles Bovary is influenced by Homais, the self-serving pharmacist, and Emma to perform a trendy operation that would correct the club foot of Hippolyte, the stableboy of the local inn. This corrective operation is seen as "new" and related to "progress" (Flaubert 1965, 125). Hippolyte is assailed with reasons why he should alter his foot. He is told, it "must considerably interfere with the proper performance of your work" (ibid., 126). And in addition to redefining him in terms of his ability to carry out work, Homais adds: "Think what would have happened if you had been called into the army, and had to fight under our national banner!" (ibid., 126). So national interests and again productivity are emphasized. But Hippolyte has been doing fine in his job as stableboy; his disability has not interfered with his performance in the community under traditional standards. In fact, Hippolyte seems to use his club foot to his advantage, as the narrator notes:

Hippolyte
power
bring
To h
A
progr

The
head
of F
who

no
par

wh
wh
we
the
Fo
pu
for

to
th
vi
m

Th
no
er
th
th
w
w
b

But on the equine foot, wide indeed as a horse's hoof, with its horny skin, and large toes, whose black nails resembled the nails of a horse shoe, the cripple ran about like a deer from morn till night. He was constantly to be seen on the Square, jumping round the carts, thrusting his limping foot forwards. He seemed even stronger on that leg than the other. By dint of hard service it had acquired, as it were, moral qualities of patience and energy; and when he was given some heavy work to do, he would support himself on it in preference to the sound one. (ibid., 126)

Hippolyte's disability is in fact an ability, one which he relies on, and from which he gets extra horsepower, as it were. But although Hippolyte is more than capable, the operation must be performed to bring him back to the human and away from the equine, which the first syllable of his name suggests. To have a disability is to be an animal, to be part of the Other.

A newspaper article appears after the operation's apparent initial success, praising the spirit of progress. The article envisages Hippolyte's welcome back into the human community.

Everything tends to show that his convalescence will be brief; and who knows if, at our next village festivity we shall not see our good Hippolyte appear in the midst of a bacchic dance, surrounded by a group of gay companions... (ibid., 128)

The article goes on to proclaim, "Hasn't the time come to cry out that the blind shall see, the deaf hear, the lame walk?" The imperative is clear: science will eradicate disability. However, by a touch of Flaubertian irony, Hippolyte's leg becomes gangrenous and has to be amputated. The older doctor who performs the operation lectures Charles about his attempt to norm this individual.

This is what you get from listening to the fads from Paris!... We are practitioners; we cure people, and we wouldn't dream of operating on someone who is in perfect health. Straighten club feet! As if one could straighten club feet indeed! It is as if one wished to make a hunchback straight! (ibid., 131)

While Flaubert's work illustrates some of the points I have been making, it is important that we do not simply think of the novel as merely an example of how an historical development lodges within a particular text. Rather, I think there is a larger claim to be made about novels and norms.

While Flaubert may parody current ideas about normalcy in medicine, there is another sense in which the novel as a form promotes and symbolically produces normative structures. Indeed, the whole focus of *Madame Bovary* is on Emma's abnormality and Flaubert's abhorrence of normal life. If we accept that novels are a social practice that arose as part of the project of middle-class hegemony,⁷ then we can see that the plot and character development of novels tend to pull toward the normative. For example, most characters in nineteenth-century novels are somewhat ordinary people who are put in abnormal circumstances, as opposed to the heroic characters who represent the ideal in earlier forms such as the epic.

If disability appears in a novel, it is rarely centrally represented. It is unusual for a main character to be a person with disabilities, although minor characters, like Tiny Tim, can be deformed in ways that arouse pity. In the case of Esther Summerson, who is scarred by smallpox, her scars are made virtually to disappear through the agency of love. On the other hand, as sufficient research has shown, more often than not villains tend to be physically abnormal: scarred, deformed, or mutilated.⁸

I am not saying simply that novels embody the prejudices of society toward people with disabilities. That is clearly a truism. Rather, I am asserting that the very structures on which the novel rests tend to be normative, ideologically emphasizing the universal quality of the central character whose normativity encourages us to identify with him or her.⁹ Furthermore, the novel's goal is to reproduce, on some level, the semiologically normative signs surrounding the reader, that paradoxically help the reader to read those signs in the world as well as the text. Thus the middleness of life, the middleness of the material world, the middleness of the normal body, the middleness of a sexually gendered, ethnically middle world is created in symbolic form and then reproduced symbolically. This normativity in narrative will by definition create the abnormal, the Other, the disabled, the native, the colonized subject, and so on.

Even on the level of plot, one can see the implication of eugenic notions of normativity. The parentage of characters in novels plays a crucial role. Rather than being self-creating beings, characters in novels have deep biological debts to their forebears, even if the characters are orphans—or perhaps especially if they are orphans. The great Heliodoric plots of romance, in which lower-class characters are found actually to be noble, take a new turn in the novel. While nobility may be less important, characters nevertheless inherit bourgeois respectability, moral rectitude, and eventually money and position through their genetic connection. In the novelistic world of nature versus nurture, nature almost always wins out. Thus *Oliver Twist* will naturally bear the banner of bourgeois morality and linguistic normativity, even though he grows up in the workhouse. Oliver will always be normal, even in abnormal circumstances.¹⁰

A further development in the novel can be seen in Zola's works. Before Zola, for example in the work of Balzac, the author attempted to show how the inherently good character of a protagonist was affected by the material world. Thus we read of the journey of the soul, of everyman or everywoman, through a trying and corrupting world. But Zola's theory of the novel depends on the idea of inherited traits and biological determinism. As Zola wrote in *The Experimental Novel*:

Determinism dominates everything. It is scientific investigation, it is experimental reasoning, which combats one by one the hypotheses of the idealists, and which replaces purely imaginary novels by novels of observation and experimentation. (1964, 18)

In this view, the author is a kind of scientist watching how humans, with their naturally inherited dispositions, interact with each other. As Zola wrote, his intention in the Rougon-Macquart series was to show how heredity would influence a family "making superhuman efforts but always failing because of its own nature and the influences upon it" (Zola 1993, viii). This series would be a study of the "singular effect of heredity" (ibid.). Zola mentions the work of Darwin and links his own novels to notions of how inherited traits interact in particular environments over time and to generalizations about human behavior:

And this is what constitutes the experimental novel: to possess a knowledge of the mechanism of the phenomena inherent in man, to show the machinery of his intellectual and sensory manifestations, under the influence of heredity and environment, such as physiology shall give them to us. (Zola 1964, 21)

Clearly stating his debt to science, Zola says that "the experimental novel is a consequence of the scientific evolution of the century" (ibid., 23). The older novel, according to Zola, is composed of imaginary adventures while the new novel is "a report, nothing more" (ibid., 124). In being a report, the new novel rejects idealized characters in favor of the norm.

These young girls so pure, these young men so loyal, represented to us in certain novels, do not belong to the earth.... We tell everything, we do not make a choice, neither do we idealize. (ibid., 127)

Zola's characters belong to "the earth." This commitment constitutes Zola's new realism, one based on the norm, the average, the inherited.

My point is that a disabilities studies consciousness can alter the way we see not just novels that have main characters who are disabled but any novel. In thinking through the issue of disability, I have come to see that almost any literary work will have some reference to the abnormal, to disability, and so on. I would explain this phenomenon as a result of the hegemony of normalcy. This normalcy must constantly be enforced in public venues (like the novel), must always be creating and bolstering its image by processing, comparing, constructing, deconstructing images of normalcy and the abnormal. In fact, once one begins to notice, there really is a rare novel that does not have some characters with disabilities—characters who are lame, tubercular, dying of AIDS, chronically ill, depressed, mentally ill, and so on.

Let me take the example of some novels by Joseph Conrad. I pick Conrad not because he is especially representative, but just because I happen to be teaching a course on Conrad. Although he is not remembered in any sense as a writer on disability, Conrad is a good test case, as it turns out, because he wrote during a period when eugenics had permeated British society and when Freud had begun to write about normal and abnormal psychology. Conrad, too, was somewhat influenced by Zola, particularly in *The Secret Agent*.

The first thing I noticed about Conrad's work is that metaphors of disability abound. Each book has numerous instances of phrases like the following selections from *Lord Jim*:

a dance of lame, blind, mute thoughts—a whirl of awful cripples.

(Conrad 1986, 114)

[he] comported himself in that clatter as though he had been stone-deaf.

(ibid., 183)

there was nothing of the cripple about him. (ibid., 234)

Her broken figure hovered in crippled little jumps... (ibid., 263)

he was made blind and deaf and without pity... (ibid., 300)

a blind belief in the righteousness of his will against all mankind... (ibid., 317)

They were erring men whom suffering had made blind to right and wrong. (ibid., 333)

you dismal cripples, you... (ibid., 340)

unmoved like a deaf man... (ibid., 319)

These references are almost like tics, appearing at regular intervals. They tend to focus on deafness, blindness, dumbness, and lameness, and they tend to use these metaphors to represent limitations on normal morals, ethics, and of course language. While it is entirely possible to maintain that these figures of speech are hardly more than mere linguistic convention, I would argue that the very regularity of these occurrences speaks to a reflexive patrolling function in which the author continuously checks and notes instances of normalcy and instances of disability—right down to the linguistic level.

Conrad's emphasis on exotic locations can also be seen as related to the issue of normalcy. Indeed the whole conception of imperialism on which writers like Conrad depend is largely based on notions of race and ethnicity that are intricately tied up with eugenics, statistical proofs of intelligence, ability, and so on. And these in turn are part of the hegemony of normalcy. Conrad's exotic settings are highlighted in his novels for their deviance from European conceptions. The protagonists are skewed from European standards of normal behavior specifically because they have traveled from Europe to, for example, the South Seas or the Belgian Congo. And Conrad focuses on those characters who, because they are influenced by these abnormal environments, lose their "singleness of purpose" (which he frequently defines as an English trait) and on those who do not.

The use of phrenology, too, is linked to the patrolling of normalcy, through the construction of character. So, in *Heart of Darkness* for example, when Marlow is about to leave for Africa a doctor measures the dimensions of his skull to enable him to discern if any quantitative changes subsequently occur as a result of the colonial encounter. So many of the characters in novels are formed from the ableist cultural repertoire of normalized head, face, and body features that characteristically signify personal qualities. Thus in *The Secret Agent*, the corpulent, lazy body of Verloc indicates his moral sleaziness, and Stevie's large ears and head shape are explicitly seen by Ossipon as characteristic of degeneracy and criminality as described in the theories of the nineteenth-century eugenic phrenologist Cesare Lombroso.

Stevie Conrad's most obviously disabled character, is a kind of center or focus of *The Secret Agent*. In a Zolaesque moment of insight, Ossipon sees Stevie's degeneracy as linked to his sister Winnie:

he gazed scientifically at that woman, the sister of a degenerate, a degenerate herself—of a murdering type. He gazed at her and invoked Lombroso.... He gazed scientifically. He gazed at her cheeks, at her nose, at her eyes, at her ears... Bad!... Fatal! (Conrad 1968, 269)

This eugenic gaze that scrutinizes Winnie and Stevie is really only a recapitulation of the novelistic gaze that sees meaning in normative and nonnormative features. In fact, every member of the Verloc family has something "wrong" with them, including Winnie's mother who has trouble walking on her edematous legs. The moral turpitude and physical grimness of London is embodied in Verloc's inner circle. Michaelis, too, is obese and "wheezed as if deadened and oppressed by the layer of fat on his chest" (ibid., 73). Karl Yundt is toothless, gouty, and walks with a cane. Ossipon is racially abnormal having "crinkly yellow hair . . . a flattened nose and prominent mouth cast in the rough mould of the Negro type . . . [and] almond-shaped eyes [that] leered languidly over high cheek-bones" (ibid., 75)—all features indicating African and Asian qualities, particularly the cunning, opiated glance.

Stevie, the metaphoric central figure and sacrificial victim of the novel, is mentally delayed. His mental slowness becomes a metaphor for his radical innocence and childlike revulsion from cruelty. He is also, in his endless drawing of circles, seen as invoking "the symbolism of a mad art attempting the inconceivable" (ibid., 76). In this sense, his vision of the world is allied with that of Conrad, who himself could easily be described as embarked on the same project. Stevie is literally taken apart, not only by Ossipon's gaze and by that of the novelist, but centrally by the bungled explosion. His fragmented body¹¹ becomes a kind of symbol of the fragmentation that Conrad emphasizes throughout his opus and that the Professor recommends in his high-tech view of anarchism as based on the power of explosion and conflagration. Stevie becomes sensitized to the exploitation of workers by his encountering a coachman with a prosthetic hook for an arm, whose whipping of his horse causes Stevie anguish. The prosthetic arm appears sinister at first, particularly as a metonymic agent of the action of whipping. But the one-armed man explains: "This ain't an easy world . . . 'Ard on 'osses, but dam' sight 'arder on poor chaps like me." He wheezed just audibly" (ibid., 165). Stevie's radical innocence is most fittingly convinced by the man's appeal to class solidarity, so Stevie ultimately is blown up for the sins of all.

In *Under Western Eyes*, the issue of normalcy is first signaled in the author's Introduction. Conrad apologizes for Razumov's being "slightly abnormal" and explains away this deviation by citing a kind of personal sensitivity as well as a Russian temperament. In addition, Conrad says that although his characters may seem odd, "nobody is exhibited as a monster here" (Conrad 1957, 51). The mention of exhibition of monsters immediately alerts us to the issue of nineteenth-century freak shows and raises the point that by depicting "abnormal" people, the author might see his own work as a kind of display of freaks.¹² Finally, Conrad makes the point that all these "abnormal" characters "are not the product of the exceptional but of the general—of the normality of their place, and time, and race" (ibid., 51). The conjunction of race and normality also alerts us to eugenic aims. What Conrad can be seen as apologizing for is the normalizing (and abnormalizing) role of the novel that must take a group of nationals (Russians) and make them into the abnormal, non-European, nonnormal Other. Interestingly, Conrad refers to anarchists and autocrats both as "imbecile." The use of this word made current by eugenic testing also shows us how pervasive is the hegemony of normalcy.

Razumov's abnormality is referred to by the narrator, at one point, as being seen by a man looking at a mirror "formulating to himself reassuring excuses for his appearance marked by the taint of some insidious hereditary disease" (ibid., 220). What makes Razumov into the cipher he is to all concerned is his lack of a recognizable identity aside from his being a Russian. So when he arrives in Geneva, Razumov says to Peter Ivanovitch, the radical political philosopher, that he will never be "a mere blind tool" simply to be used (ibid., 231). His refusal to be a "blind tool" ends up, ironically, in Razumov being made deaf by Necator, who deliberately bursts his eardrums with blows to the head. The world becomes for Razumov "perfectly silent—soundless as shadows" (ibid., 339) and "a world of mutes. Silent men, moving, unheard . . ." (ibid., 340). For both Conrad and Razumov, deafness is the end of language, the end of discourse, the ultimate punishment that makes all the rest of the characters appear as if their words were useless anyway. As Necator says, "He shall never be any use as spy on any one. He won't talk, because he will never hear anything in his life—not a thing" (ibid., 341). After Razumov

walks into
that" (ibid.
conditions
are open a
part in the
to protect

I am no
to show th
deployed.
body, an
hegemony
been done

What
normal—
of industr
of the heg
novel for
typicality
into the r
novel pro
ideologic
are mom
consciou
institute

Notes

1. This
Pres
said
2. One
of fi
the
is rr
can
3. Thi
do
4. See
5. Ma
test
An
rar
or
int
us
art
6. If
Ct
7. Th
at
ar
N

walks into the street and is run over by a car, he is described as "a hopeless cripple, and stone deaf with that" (ibid., 343). He dies from his disabilities, as if life were in fact impossible to survive under those conditions. Miss Haldin, in contrast, gains her meaning in life from these events and says, "my eyes are open at last and my hands are free now" (ibid., 345). These sets of arrangements play an intimate part in the novel and show that disability looms before the writer as a *memento mori*. Normality has to protect itself by looking into the maw of disability and then recovering from that glance.

I am not claiming that this reading of some texts by Conrad is brilliant or definitive. But I do want to show that even in texts that do not appear to be about disability, the issue of normalcy is fully deployed. One can find in almost any novel, I would argue, a kind of surveying of the terrain of the body, an attention to difference—physical, mental, and national. This activity of consolidating the hegemony of normalcy is one that needs more attention, in addition to the kinds of work that have been done in locating the thematics of disability in literature.

What I have tried to show here is that the very term that permeates our contemporary life—the normal—is a configuration that arises in a particular historical moment. It is part of a notion of progress, of industrialization, and of ideological consolidation of the power of the bourgeoisie. The implications of the hegemony of normalcy are profound and extend into the very heart of cultural production. The novel form, that proliferator of ideology, is intricately connected with concepts of the norm. From the typicality of the central character, to the normalizing devices of plot to bring deviant characters back into the norms of society, to the normalizing coda of endings, the nineteenth- and twentieth-century novel promulgates and disburses notions of normalcy and by extension makes of physical differences ideological differences. Characters with disabilities are always marked with ideological meaning, as are moments of disease or accident that transform such characters. One of the tasks for a developing consciousness of disability issues is the attempt, then, to reverse the hegemony of the normal and to institute alternative ways of thinking about the abnormal.

Notes

1. This thinking obviously is still alive and well. During the U. S. Presidential election of 1994, Newt Gingrich accused President Clinton of being "the enemy of normal Americans." When asked at a later date to clarify what he meant, he said his meaning was that "normal" meant "middle class." (*New York Times*, November 14, 1994, A17)
2. One wants to make sure that Aristotle's idea of the mean is not confused with the norm. The Aristotelian mean is a kind of fictional construct. Aristotle advocates that in choosing between personal traits, one should tend to choose between the extremes. He does not however think of the population as falling generally into that mean. The mean, for Aristotle, is more of heuristic device to assist in moral and ethical choices. In the sense of being a middle term or a middle way, it carries more of a spacial sense than does the term "average" or "norm."
3. This rather remarkable confluence between eugenics and statistics has been pointed out by Donald A. MacKenzie, but I do not believe his observations have had the impact they should.
4. See my *Enforcing Disability* Chapter Six for more on the novel *Frankenstein* and its relation to notions of disability.
5. Many twentieth century prejudices against the learning disabled come from this period. The founder of the intelligence test still in use, Alfred Binet, was a Galton acolyte. The American psychologist Henry H. Goddard used Binet's tests in America and turned the numbers into categories—"idiots" being those whose mental age was one or two, "imbeciles" ranged in mental age from three to seven. Goddard invented the term "moron" (which he took from the Greek for "dull" or "stupid") for those between eight and twelve. Pejorative terms like "moron" or "retarded" have by now found their way into common usage. (Kevles, 78) And even the term "mongoloid idiot" to describe a person with Down's syndrome was used as recently as 1970s not as a pejorative term but in medical texts as a diagnosis. [see Michael Bérubé's fascinating article "Life As We Know It" for more on this phenomenon of labelling.]
6. If this argument sounds strangely familiar, it is being repeated and promulgated in the neo-conservative book *The Bell Curve* which claims that poverty and intelligence are linked through inherited characteristics.
7. This assumption is based on my previous works—*Factual Fictions: Origins of the English Novel and Resisting Novels: Fiction and Ideology*—as well as the cumulative body of writing about the relationship between capitalism, material life, culture, and fiction. The work of Raymond Williams, Terry Eagleton, Nancy Armstrong, Mary Poovey, John Bender, Michael McKeon, and others points in similar directions.

8. The issue of people with disabilities in literature is a well-documented one and is one I want generally to avoid in this work. Excellent books abound on the subject, including Alan Gartner and Tom Joe, eds., *Images of the Disabled, Disabling Images* (New York: Praeger, 1987) and the work of Deborah Kent including "In Search of a Heroine: Images of Women with Disabilities in Fiction and Drama" in Michelle Fine and Adrienne Asch, eds. *Women with Disabilities: Essays in Psychology, Culture, and Politics* (Philadelphia: Temple University Press, 1988).
9. And if the main character has a major disability, then we are encouraged to identify with that character's ability to overcome their disability.
10. The genealogical family line is both hereditary and financial in the bourgeois novel. The role of the family is defined by Jürgen Habermas thus: "as a genealogical link it [the family] guaranteed a continuity of personnel that consisted materially in the accumulation of capital and was anchored in the absence of legal restrictions concerning the inheritance of property." (47) The fact that the biological connectedness and the financial connectedness are conflated in the novel only furthers the point that normality is an enforced condition that upholds the totality of the bourgeois system.
11. I deal with the Lacanian idea of the *corps morcelé* in Chapter 6 of *Enforcing Normalcy*. In that section I show the relation between the fragmented body and the response to disability. Here, let me just say that Stevie's turning into a fragmented body makes sense given the fear "normal" observers have that if they allow a concept of disability to associate with their bodies, they will lose control of their normalcy and their bodies will fall apart.
12. See Chapter 4 of *Enforcing Normalcy* for more on the relation of freak shows to nationalism, colonialism, and disability. See also Rosemarie Garland Thompson's *Freakery: Cultural Spectacles of the Extraordinary Body* (New York: NYU Press, 1996).

Works Cited

- Bell, Alexander Graham. 1969. *Memoir upon the Formation of a Deaf Variety of the Human Race*. Washington, DC: Alexander Graham Bell Association for the Deaf.
- Blacker, C. P. 1952. *Eugenics: Galton and After*. Cambridge, Mass.: Harvard University Press.
- Conrad, Joseph. 1924. "An Outpost of Progress." In *Tales of Unrest*. Garden City: Doubleday, Page & Company.
- . 1990 [1968]. *The Secret Agent*. London: Penguin.
- . 1989 [1957]. *Under Western Eyes*. London: Penguin.
- . 1924. *Youth*. Garden City: Doubleday, Page & Company.
- . 1986. *Lord Jim*. London: Penguin.
- Defoe, Daniel. 1975. *Robinson Crusoe*. New York: Norton.
- Farrall, Lyndsay Andrew. 1985. *The Origin and Growth of the English Eugenics Movement 1865–1925*. New York: Garland.
- Flaubert, Gustave. 1965. *Madam Bovary*. Trans. Paul de Man. New York: Norton.
- Freud, Sigmund. 1977. *Introductory Lectures on Psychoanalysis*. Trans. James Strachey. New York: Norton.
- Kevles, Daniel J. 1985. *In the Name of Eugenics: Genetics and the Uses of Human Heredity*. New York: Alfred A. Knopf.
- MacKenzie, Donald. A. 1981. *Statistics in Britain, 1865–1930*. Edinburgh: Edinburgh University Press.
- Marx, Karl. 1970. *Capital*. Vol. 1. Trans. Samuel Moore and Edward Aveling. New York: International Publishers.
- Porter, Theodore M. 1986. *The Rise of Statistical Thinking 1820–1900*. Princeton: Princeton University Press.
- Stallybass, Peter and Allon White. 1987. *The Politics of Transgression*. Ithaca, NY: Cornell University Press.
- Stigler, Stephen M. 1986. *The History of Statistics: The Measurement of Uncertainty before 1900*. Cambridge, Mass.: Harvard University Press.
- Zola, Emile. 1964. *The Experimental Novel and Other Essays*. Trans. Belle M. Sherman. New York: Haskel House.
- . 1993. *The Masterpiece*. Trans. Thomas Walton. London: Oxford University Press.